

**REMARKS/ARGUMENTS**

Reexamination of the captioned application is respectfully requested.

**A. SUMMARY OF THIS AMENDMENT**

By the current amendment, Applicants basically:

1. Editorially amend the specification.
2. Amend independent claim 13 to include therein limitations of dependent claim 18.
3. Cancel dependent claim 18 without prejudice or disclaimer.
4. Respectfully traverse all prior art rejections.

**B. PATENTABILITY OF THE CLAIMS**

Claims 13-15 and 18-20 stand rejected under 35 USC 102(b) as being anticipated by EP 1,215,730 to Shiomi et al. All prior art rejections are respectfully traversed for at least the following reasons.

Independent claim 13 has been amended to include limitations of (now cancelled) dependent claim 18. As such, independent claim 13 specifies that the surface of the substrate having the off-angle within a range of 2 to 10 degrees from the (000-1) carbon surface is taken as the crystal growth surface of the substrate. Among other things, this off-angle range is not taught or suggested by EP 1,215,730 to Shiomi et al.

Shiomi uses SiC wafers 2 made using a 4H-SiC {03-38} substrate or (0001) 8 degrees off substrate for growing the active layer 6 (see Shiomi ¶ [0082]). That is to say, the surface of wafer 2 on which the layer 6 is grown inclines by  $54.74^{\circ}$  relative to the bottom (000-1) C surface or  $8^{\circ}$  relative to the top (0001) Si surface as shown in Fig. 2. Shiomi's {03-38} crystal growth surface has also a specified off-angle relative to the (000-1)C surface, but Shiomi's off-angle is  $54.74^{\circ}$ , which is considerably outside Applicants' claimed range of  $2 - 10^{\circ}$ .

Thus, contrary to allegations of the office action, there is no disclosure of an off-angle of  $2 - 10^0$  in Shiomi ¶ [0082].

In conjunction with the product by process contentions of the office action, Applicants note that there are structural differences between the subject matter of the claims and the Shiomi structure. For example, the lattice orientation (Miller index) of silicon carbide crystal surface (2a) being at an off-angle of  $2 - 10^0$  from the (000-1)C surface 2, on which the drift layer is formed, can be detected by an X-ray scattering technique. Further, as described in Shiomi ¶ [0017], the orientation of the growth surface affects characteristics and properties of the crystal due to the micro-pipes and screw dislocations generated during the growth. Thus, the difference in orientation of the crystal growth surface can be distinguished.

Various dependent claims have separate patentable merit. For example, concerning dependent claim 19, Shiomi has no teaching or suggestion about the claimed film growth rate as having a film-thickness increasing rate per hour of  $10 \mu\text{m}$ . Shiomi states that (for Shiomi's active layer 6) the "raw material gas flux and dopant raw material feed amount during CVD growth must be adjusted according to the crystal plane orientation being used" (*See*, paragraph [0084], col. 16, lines 16-20). Shiomi then proceeds to provide active layer parameters in col. 16, lines 30 – 37. But the parameters described by Shiomi do not equate to the claimed rate.

Further, Applicants do regard the  $10 \mu\text{m/h}$  or more rate of dependent claim 19 to be critical. Applicants' specification does indeed assert and establish criticality. The specification contrasts three different embodiments of applicants' product with respect to comparative examples, and relates superiority of applicants' product to the different flow rates (*See*, paragraph [0067] - [0070] for comparative benefits).

Although brief comment is supplied for dependent claim 19, in view of the patentability of the independent claim all dependent claims also distinguish and therefore need not be separately argued at this time.

**C. MISCELLANEOUS**

In view of the foregoing and other considerations, all claims are deemed in condition for allowance. A formal indication of allowability is earnestly requested.

The Commissioner is authorized to charge the undersigned's deposit account #14-1140 in whatever amount is necessary for entry of these papers and the continued pendency of the captioned application.

Should the Examiner feel that an interview with the undersigned would facilitate allowance of this application, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,

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